

REMARKS

Claims 2 – 5, 8 – 11, and 12 – 19 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejection in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1 – 2, 6, 8 – 10, 12, 13, 15 – 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPR (Applicants' admitted Prior Art shown at least in Figure 8 and specification pages 2 and 3, hereinafter AAPR) and further in view of Masaki et al. (U.S. Pat. No. 6,271,907, herein after Masaki).

Claim 2 has been rewritten in independent form. Claim 2 now calls for a manufacturing method of a liquid crystal display comprising the steps of injecting a liquid crystal from a liquid crystal injection port into liquid crystal sealing-in areas, applying an uncured end-sealing material to the liquid crystal injection port after injecting the liquid crystal, and removing at least a part of the end-sealing material bleeding outside a contour of the liquid crystal panel, wherein the end-sealing material removing step includes a step of absorbing the end-sealing material by bringing an absorbent material into contact with the end-sealing material, and absorbing the end-sealing material by the absorbent material. Lastly, claim 2 now calls for curing the end-sealing material after the end-sealing material removing step. Masaki does not teach, provide motivation, or suggest such a method.

More particularly, in column 6, lines 58-62 of Masaki, it states, "Thereafter, a portion of liquid crystal attached to the exposed end portion of the scanning side substrate 1 is wiped off with a cotton swab 102 optionally impregnated with a prescribed (wiping) solvent (as shown in

FIGS. 11A and 11B)." As such, Masaki teaches the removal of liquid crystal. This contrasts with the claimed invention which calls for the removal of an end-sealing material. There is no teaching, suggestion, or motivation, therefore, to look to the teachings of Masaki to arrive at the claimed invention. That is, the removal of liquid crystal in this manner falls well short of the removal of an end-sealing material.

Further, the Examiner alleges, in the Response to Arguments section of the Final Office Action, that there is motivation to combine the teachings of Masaki with those of the AAPR because an excess of sealing agent may be removed along with any excess liquid crystal from the liquid crystal injection port by cutting the liquid crystal cell with a carbide cutter. The Examiner relies on column 8, lines 14-34 of Masaki in support of this allegation, which states:

"The thus prepared pair of scanning-side and data-side substrates 54 and 30 was washed with pure water and dried.

On the data-side substrate 30, a sealing agent 7 (59 in FIG. 5) ("Struct Bond", mfd. By Mitsui Toatsu K.K.) was disposed at the periphery thereof in a rectangular (frame-shaped) pattern so as to leave a liquid crystal injection port 8 shown in FIG. 1, and 1.2 μm -dia. SiO_2 spacer beads 60 ("Silica Microbeads", mfd. By Shokubai Kasei Kogyo K.K.) were dispersed at a density of 300 (particles)/ mm^2 .

Then, the scanning-side substrate 54 and the data-side substrate 30 were applied to each other so that rubbing directions of the substrates were parallel and identical to each other and the scanning electrodes 55 and the data electrodes intersect each other to form an electrode matrix under a pressure of 3 kg/cm² at 170C for 4 hours, thus curing the sealing agent 59 (7). The liquid crystal injection port 8 was located on one of mutually opposite (two) side parallel to the data electrodes (stripe-shaped lines) 34 of the data-side substrate 4. In the vicinity of the liquid crystal injection port 8, the (blank) cell was scribed and cut in a shape as shown in FIGS. 6A and 6B by using a carbide wheel cutter (cutting tool)." (emphasis added)

This disclosure, however, still teaches the scribing and cutting of the substrate after the curing of the material. This is in contrast to the claimed invention which calls for an end-sealing material applying step of applying an uncured end-sealing material to the liquid crystal injection

port after injecting the liquid crystal, an end-sealing material removing step of removing at least a part of the end-sealing material bleeding outside a contour of the liquid crystal panel, and an end-sealing material curing step of curing said end-sealing material after said end-sealing material removing step. Moreover, the claimed invention calls for the removal of an end-sealing material that is applied to the injection port. The disclosure of Masaki, however, teaches (allegedly) the removal of a sealing agent that is not applied to the injection port, but rather in a rectangular or frame-shaped pattern that leaves the injection port open.

Moreover, Masaki teaches the removal of the sealing agent before the injection of the liquid crystal. Again, this contrasts with the claimed invention which calls for applying an uncured end-sealing material to the liquid crystal injection port after injecting the liquid crystal. As such, Applicants respectfully assert that the proposed combination of the AAPR and Masaki does not yield the claimed invention. Although Masaki allegedly teaches the removal of a sealing agent by cutting or scribing, this alleged removal still occurs after the curing of the sealing agent. There is, therefore, no teaching, suggestion, or motivation that would lead one skilled in the art to look to Masaki to modify the AAPR to arrive at the claimed method of removing at least a part of the end-sealing material bleeding outside a contour of the liquid crystal panel before curing the end-sealing material. Without this teaching, suggestion, or motivation, the claimed method is not obvious.

Still further, as stated in the Applicants' previous Response and described on pages 2-3 of the specification, the claimed method provides distinct advantages over removing the end sealing material after curing, as taught by the AAPR and Masaki, in that damage such as microcracks in the delicate glass substrates can be averted because a razor or some other device is not needed to "shave" the excess cured sealing material off of the substrates, it becomes easier to position other

elements such as polarizers onto the substrates because there is no excess sealing material present, and the liquid crystal panel may be more easily positioned within a case body. Moreover, as damage such as microcracks in the substrate is a condition the claimed invention intends to avoid, one skilled in the art would not look to Masaki's teaching of cutting the substrates with a carbide wheel cutter because such a device would risk causing these microcracks. As such, Masaki actually teaches away from the claimed invention and, therefore, it would not have been obvious to combine the teachings of the AAPR with those of Masaki to arrive at the claimed invention.

Claims 3 – 5, 7, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPR (Applicants' admitted Prior Art shown at least in Figure 8 and specification pages 2 and 3, hereinafter AAPR) and Masaki et al. (U.S. Patent No. 6,271,907, herein after Masaki) as applied to Claims 1 – 2 above and further in view of Forlini et al. (U.S. Patent No. 3,744,126, herein after Forilini).

Claim 3 has been amended and rewritten in independent form. Claim 3 now calls for a manufacturing method of a liquid crystal display comprising the steps of injecting a liquid crystal from a liquid crystal injection port into liquid crystal sealing-in areas, applying an uncured end-sealing material to the liquid crystal injection port after injecting the liquid crystal, and removing at least a part of the end-sealing material bleeding outside a contour of the liquid crystal panel, wherein the end-sealing material removing step includes a step of absorbing the end-sealing material by bringing a suction jig into contact with the end-sealing material, and absorbing the end-sealing material into the suction jig. Lastly, claim 3 calls for curing the end-sealing material after the end-sealing material removing step. Neither Masaki, the admitted prior art, Forlini, nor any combination thereof yields the claimed invention. That is, as stated above, Masaki teaches

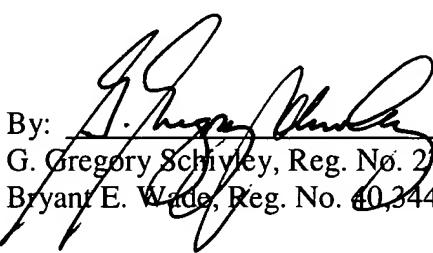
the removal of liquid crystal, while the claimed invention calls for the removal of an end-sealing material. Since the removal of liquid crystal falls well short of the removal of an end-sealing material, it would not have been obvious to combine the teachings of Masaki, the admitted prior art, and Forlini to arrive at the claimed invention. As such, claim 3 and each corresponding dependent claim are not obvious.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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